<110> Trimeris, Inc.

<120> Pharmaceutical composition for improved administration of HIV
       gp41-derived peptides, and its use in therapy

<130> TRM-003

<150> US 60/414,441
<151> 2002-09-27

<160> 95

<170> PatentIn version 3.2

<210> 1
<211> 60
<212> PRT
<213> Human immunodeficiency virus type 1

<400> 1

Thr Leu Thr Val Gln Ala Arg Gln Leu Leu Ser Gly Ile Val Gln Gln
1   5   10   15

Gln Asn Asn Leu Leu Arg Ala Ile Glu Ala Gln Gln His Leu Leu Gln
            20   25   30

Leu Thr Val Trp Gly Ile Lys Gln Leu Gln Ala Arg Ile Leu Ala Val
            35   40   45

Glu Arg Tyr Leu Lys Asp Gln Gln Leu Leu Gly Ile
        50   55   60

<210> 2
<211> 64
<212> PRT
<213> Human immunodeficiency virus type 1

<400> 2

Trp Asn Ala Ser Trp Ser Asn Lys Ser Leu Glu Gln Ile Trp Asn Asn
1   5   10   15

Met Thr Trp Met Glu Trp Asp Arg Glu Ile Asn Asn Tyr Thr Ser Leu
            20   25   30

Ile His Ser Leu Ile Glu Glu Ser Gln Asn Gln Gln Glu Lys Asn Glu
            35   40   45

Gln Glu Leu Leu Glu Leu Asp Lys Trp Ala Ser Leu Trp Asn Trp Phe
     50   55   60

<210> 3
<211> 38
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 3

Asn Asn Leu Leu Arg Ala Ile Glu Ala Gln Gln His Leu Leu Gln Leu
1   5   10   15

Thr Val Trp Gly Ile Lys Gln Leu Gln Ala Arg Ile Leu Ala Val Glu
              20   25   30

Arg Tyr Leu Lys Asp Gln
          35

<210> 4
<211> 36
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 4

Tyr Thr Ser Leu Ile His Ser Leu Ile Glu Glu Ser Gln Asn Gln Gln
1   5   10   15

Glu Lys Asn Glu Gln Glu Leu Leu Glu Leu Asp Lys Trp Ala Ser Leu
              20   25   30

Trp Asn Trp Phe
          35

<210> 5
<211> 39
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 5

Trp Gln Glu Trp Glu Gln Lys Ile Thr Ala Leu Leu Glu Gln Ala Gln
1   5   10   15

Ile Gln Gln Glu Lys Asn Glu Tyr Glu Leu Gln Lys Leu Asp Lys Trp
                20   25   30

Ala Ser Leu Trp Glu Trp Phe
            35

<210>   6
<211>   43
<212>   PRT
<213>   Artificial

<220>
<223>   synthesized

<400>   6

Gly Ser Thr Met Gly Ala Arg Ser Met Thr Leu Thr Val Gln Ala Arg
1   5   10   15

Gln Leu Leu Ser Gly Ile Val Gln Gln Asn Asn Leu Leu Arg Ala
            20   25   30

Ile Glu Ala Gln Gln His Leu Leu Gln Leu Thr
            35   40

<210>   7
<211>   54
<212>   PRT
<213>   Artificial

<220>
<223>   synthesized

<400>   7

Gly Ser Thr Met Gly Ala Arg Ser Met Thr Leu Thr Val Gln Ala Arg
1   5   10   15

Gln Leu Leu Ser Gly Ile Val Gln Gln Asn Asn Leu Leu Arg Ala
            20   25   30

Ile Glu Ala Gln Gln His Leu Leu Gln Leu Thr Val Trp Gly Ile Lys
            35   40   45

Gln Leu Gln Ala Arg Ile
    50

<210>   8
<211>   36
<212>   PRT
<213>   Artificial

<220>
<223>   synthesized

<400>   8

Gly Ala Arg Ser Met Thr Leu Thr Val Gln Ala Arg Gln Leu Leu Ser
1   5   10   15

Gly Ile Val Gln Gln Gln Asn Asn Leu Leu Arg Ala Ile Glu Ala Gln
            20   25   30

Gln His Leu Leu
        35

<210>   9
<211>   38
<212>   PRT
<213>   Artificial

<220>
<223>   synthesized

<400>   9

Gly Ala Arg Ser Met Thr Leu Thr Val Gln Ala Arg Gln Leu Leu Ser
1   5   10   15

Gly Ile Val Gln Gln Gln Asn Asn Leu Leu Arg Ala Ile Glu Ala Gln
            20   25   30

Gln His Leu Leu Gln Leu
        35

<210>   10
<211>   40
<212>   PRT
<213>   Artificial

<220>
<223>   synthesized

<400> 10

Gly Ala Arg Ser Met Thr Leu Thr Val Gln Ala Arg Gln Leu Leu Ser
1   5   10   15

Gly Ile Val Gln Gln Gln Asn Asn Leu Leu Arg Ala Ile Glu Ala Gln
            20   25   30

Gln His Leu Leu Gln Leu Thr Val
        35   40

<210>   11
<211>   50
<212>   PRT
<213>   Artificial

<220>
<223>   synthesized

<400>   11

Gly Ala Arg Ser Met Thr Leu Thr Val Gln Ala Arg Gln Leu Leu Ser
1   5   10   15

Gly Ile Val Gln Gln Gln Asn Asn Leu Leu Arg Ala Ile Glu Ala Gln
            20   25   30

Gln His Leu Leu Gln Leu Thr Val Trp Gly Ile Lys Gln Leu Gln Ala
        35   40   45

Arg Ile
    50

<210>   12
<211>   36
<212>   PRT
<213>   Artificial

<220>
<223>   synthesized

<400>   12

Ala Arg Ser Met Thr Leu Thr Val Gln Ala Arg Gln Leu Leu Ser Gly
1   5   10   15

Ile Val Gln Gln Gln Asn Asn Leu Leu Arg Ala Ile Glu Ala Gln Gln
            20   25   30

His Leu Leu Gln
        35

<210>   13
<211>   36
<212>   PRT
<213>   Artificial

<220>
<223>   synthesized

<400>   13

Arg Ser Met Thr Leu Thr Val Gln Ala Arg Gln Leu Leu Ser Gly Ile
1   5   10   15

Val Gln Gln Gln Asn Asn Leu Leu Arg Ala Ile Glu Ala Gln Gln His
            20   25   30

Leu Leu Gln Leu
        35

<210>   14
<211>   36
<212>   PRT
<213>   Artificial

<220>
<223>   synthesized

<400>   14

Ser Met Thr Leu Thr Val Gln Ala Arg Gln Leu Leu Ser Gly Ile Val
1   5   10   15

Gln Gln Gln Asn Asn Leu Leu Arg Ala Ile Glu Ala Gln Gln His Leu
            20   25   30

Leu Gln Leu Thr
        35

<210>   15
<211>   35
<212>   PRT
<213>   Artificial

<220>
<223>   synthesized

<400> 15

Met Thr Leu Thr Val Gln Ala Arg Gln Leu Leu Ser Gly Ile Val Gln
1   5   10   15

Gln Gln Asn Asn Leu Leu Arg Ala Ile Glu Ala Gln Gln His Leu Leu
            20   25   30

Gln Leu Thr
        35

<210>   16
<211>   36
<212>   PRT
<213>   Artificial

<220>
<223>   synthesized

<400>   16

Met Thr Leu Thr Val Gln Ala Arg Gln Leu Leu Ser Gly Ile Val Gln
1   5   10   15

Gln Gln Asn Asn Leu Leu Arg Ala Ile Glu Ala Gln Gln His Leu Leu
            20   25   30

Gln Leu Thr Val
        35

<210>   17
<211>   34
<212>   PRT
<213>   Artificial

<220>
<223>   synthesized

<400>   17

Thr Leu Thr Val Gln Ala Arg Gln Leu Leu Ser Gly Ile Val Gln Gln
1   5   10   15

Gln Asn Asn Leu Leu Arg Ala Ile Glu Ala Gln Gln His Leu Leu Gln
            20   25   30

Leu Thr

<210> 18
<211> 35
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 18

Thr Leu Thr Val Gln Ala Arg Gln Leu Leu Ser Gly Ile Val Gln Gln
1   5   10   15

Gln Asn Asn Leu Leu Arg Ala Ile Glu Ala Gln Gln His Leu Leu Gln
            20   25   30

Leu Thr Val
        35

<210> 19
<211> 36
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 19

Thr Leu Thr Val Gln Ala Arg Gln Leu Leu Ser Gly Ile Val Gln Gln
1   5   10   15

Gln Asn Asn Leu Leu Arg Ala Ile Glu Ala Gln Gln His Leu Leu Gln
            20   25   30

Leu Thr Val Trp
        35

<210> 20
<211> 37
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 20

Thr Leu Thr Val Gln Ala Arg Gln Leu Leu Ser Gly Ile Val Gln Gln
1   5   10   15

Gln Asn Asn Leu Leu Arg Ala Ile Glu Ala Gln Gln His Leu Leu Gln
            20   25   30

Leu Thr Val Trp Gly
          35

<210> 21
<211> 38
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 21

Thr Leu Thr Val Gln Ala Arg Gln Leu Leu Ser Gly Ile Val Gln Gln
1   5   10   15

Gln Asn Asn Leu Leu Arg Ala Ile Glu Ala Gln Gln His Leu Leu Gln
            20   25   30

Leu Thr Val Trp Gly Ile
          35

<210> 22
<211> 44
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 22

Thr Leu Thr Val Gln Ala Arg Gln Leu Leu Ser Gly Ile Val Gln Gln
1   5   10   15

Gln Asn Asn Leu Leu Arg Ala Ile Glu Ala Gln Gln His Leu Leu Gln
            20   25   30

Leu Thr Val Trp Gly Ile Lys Gln Leu Gln Ala Arg
          35   40

<210> 23
<211> 36
<212> PRT

<213> Artificial

<220>
<223> synthesized

<400> 23

Leu Thr Val Gln Ala Arg Gln Leu Leu Ser Gly Ile Val Gln Gln Gln
1   5   10   15

Asn Asn Leu Leu Arg Ala Ile Glu Ala Gln Gln His Leu Leu Gln Leu
            20   25   30

Thr Val Trp Gly
        35

<210> 24
<211> 42
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 24

Gln Ala Arg Gln Leu Leu Ser Gly Ile Val Gln Gln Gln Asn Asn Leu
1   5   10   15

Leu Arg Ala Ile Glu Ala Gln Gln His Leu Leu Gln Leu Thr Val Trp
            20   25   30

Gly Ile Lys Gln Leu Gln Ala Arg Ile Leu
        35   40

<210> 25
<211> 47
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 25

Gln Ala Arg Gln Leu Leu Ser Gly Ile Val Gln Gln Gln Asn Asn Leu
1   5   10   15

Leu Arg Ala Ile Glu Ala Gln Gln His Leu Leu Gln Leu Thr Val Trp
            20   25   30

Gly Ile Lys Gln Leu Gln Ala Arg Ile Leu Ala Val Glu Arg Tyr
        35   40   45

<210> 26
<211> 49
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 26

Gln Ala Arg Gln Leu Leu Ser Gly Ile Val Gln Gln Gln Asn Asn Leu
1   5   10   15

Leu Arg Ala Ile Glu Ala Gln Gln His Leu Leu Gln Leu Thr Val Trp
                20   25   30

Gly Ile Lys Gln Leu Gln Ala Arg Ile Leu Ala Val Glu Arg Tyr Leu
        35   40   45

Lys

<210> 27
<211> 51
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 27

Gln Ala Arg Gln Leu Leu Ser Gly Ile Val Gln Gln Gln Asn Asn Leu
1   5   10   15

Leu Arg Ala Ile Glu Ala Gln Gln His Leu Leu Gln Leu Thr Val Trp
                20   25   30

Gly Ile Lys Gln Leu Gln Ala Arg Ile Leu Ala Val Glu Arg Tyr Leu
        35   40   45

Lys Asp Gln
    50

<210> 28
<211> 36
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 28

Ser Gly Ile Val Gln Gln Gln Asn Asn Leu Leu Arg Ala Ile Glu Ala
1   5   10   15

Gln Gln His Leu Leu Gln Leu Thr Val Trp Gly Ile Lys Gln Leu Gln
            20   25   30

Ala Arg Ile Leu
        35

<210> 29
<211> 45
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 29

Ser Gly Ile Val Gln Gln Gln Asn Asn Leu Leu Arg Ala Ile Glu Ala
1   5   10   15

Gln Gln His Leu Leu Gln Leu Thr Val Trp Gly Ile Lys Gln Leu Gln
            20   25   30

Ala Arg Ile Leu Ala Val Glu Arg Tyr Leu Lys Asp Gln
        35   40   45

<210> 30
<211> 41
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 30

Gln Gln Gln Asn Asn Leu Leu Arg Ala Ile Glu Ala Gln Gln His Leu
1   5   10   15

Leu Gln Leu Thr Val Trp Gly Ile Lys Gln Leu Gln Ala Arg Ile Leu
            20   25   30

Ala Val Glu Arg Tyr Leu Lys Asp Gln
        35   40

<210> 31
<211> 34
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 31

Arg Ala Ile Glu Ala Gln Gln His Leu Leu Gln Leu Thr Val Trp Gly
1   5   10   15

Ile Lys Gln Leu Gln Ala Arg Ile Leu Ala Val Glu Arg Tyr Leu Lys
            20   25   30

Asp Gln

<210> 32
<211> 36
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 32

Trp Met Glu Trp Asp Arg Glu Ile Asn Asn Tyr Thr Ser Leu Ile His
1   5   10   15

Ser Leu Ile Glu Glu Ser Gln Asn Gln Gln Glu Lys Asn Glu Gln Glu
            20   25   30

Leu Leu Glu Leu
        35

<210> 33
<211> 41
<212> PRT

<213> Artificial

<220>
<223> synthesized

<400> 33

Cys Gly Gly Asn Asn Leu Leu Arg Ala Ile Glu Ala Gln Gln His Leu
1   5   10   15

Leu Gln Leu Thr Val Trp Gly Ile Lys Gln Leu Gln Ala Arg Ile Leu
            20   25   30

Ala Val Glu Arg Tyr Leu Lys Asp Gln
        35   40

<210> 34
<211> 31
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 34

Asn Asn Leu Leu Arg Ala Ile Glu Ala Gln Gln His Leu Leu Gln Leu
1   5   10   15

Thr Val Trp Gly Ile Lys Gln Leu Gln Ala Arg Ile Leu Ala Val
            20   25   30

<210> 35
<211> 41
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 35

Asn Asn Leu Leu Arg Ala Ile Glu Ala Gln Gln His Leu Leu Gln Leu
1   5   10   15

Thr Val Trp Gly Ile Lys Gln Leu Gln Ala Arg Ile Leu Ala Val Glu
            20   25   30

Arg Tyr Leu Lys Asp Gln Gly Gly Cys
        35   40

<210> 36
<211> 44
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 36

Cys Gly Gly Asn Asn Leu Leu Arg Ala Ile Glu Ala Gln Gln His Leu
1   5   10   15

Leu Gln Leu Thr Val Trp Gly Ile Lys Gln Leu Gln Ala Arg Ile Leu
            20   25   30

Ala Val Glu Arg Tyr Leu Lys Asp Gln Gly Gly Cys
        35   40

<210> 37
<211> 39
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 37

Leu Ser Gly Ile Val Gln Gln Gln Asn Asn Leu Leu Arg Ala Ile Glu
1   5   10   15

Ala Gln Gln His Leu Leu Gln Leu Thr Val Trp Gly Ile Lys Gln Leu
            20   25   30

Gln Ala Arg Ile Leu Ala Val
        35

<210> 38
<211> 36
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 38

Tyr Thr Asn Thr Ile Tyr Thr Leu Leu Glu Glu Ser Gln Asn Gln Gln

```
1                    5                        10                        15
```

Glu Lys Asn Glu Gln Glu Leu Leu Glu Leu Asp Lys Trp Ala Ser Leu
            20   25   30

Trp Asn Trp Phe
        35

<210> 39
<211> 36
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 39

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Tyr Thr Gly Ile Ile Tyr Asn Leu Leu Glu Glu Ser Gln Asn Gln Gln
1                    5                        10                        15
```

Glu Lys Asn Glu Gln Glu Leu Leu Glu Leu Asp Lys Trp Ala Asn Leu
            20   25   30

Trp Asn Trp Phe
        35

<210> 40
<211> 36
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 40

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Tyr Thr Ser Leu Ile Tyr Ser Leu Leu Glu Lys Ser Gln Ile Gln Gln
1                    5                        10                        15
```

Glu Lys Asn Glu Gln Glu Leu Leu Glu Leu Asp Lys Trp Ala Ser Leu
            20   25   30

Trp Asn Trp Phe
        35

<210> 41
<211> 36

<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 41

Tyr Thr Ser Leu Ile His Ser Leu Ile Glu Glu Ser Gln Asn Gln Gln
1   5   10   15

Glu Lys Asn Glu Gln Glu Leu Leu Glu Leu Asp Lys Trp Ala Ser Leu
            20   25   30

Phe Asn Phe Phe
        35

<210> 42
<211> 36
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 42

Trp Gln Glu Trp Glu Gln Lys Val Arg Tyr Leu Glu Ala Asn Ile Thr
1   5   10   15

Ala Leu Leu Glu Gln Ala Gln Ile Gln Gln Glu Lys Asn Glu Tyr Glu
            20   25   30

Leu Gln Lys Leu
        35

<210> 43
<211> 42
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 43

Asp Arg Glu Ile Asn Asn Tyr Thr Ser Leu Ile His Ser Leu Ile Glu
1   5   10   15

Glu Ser Gln Asn Gln Gln Glu Lys Asn Glu Gln Glu Leu Leu Glu Leu

```
             20                    25                    30


Asp Lys Trp Ala Ser Leu Trp Asn Trp Phe
        35                    40                      .


<210>  44
<211>  48
<212>  PRT
<213>  Artificial

<220>
<223>  synthesized

<400>  44

Met Thr Trp Met Glu Trp Asp Arg Glu Ile Asn Asn Tyr Thr Ser Leu
1               5                   10                  15


Ile His Ser Leu Ile Glu Glu Ser Gln Asn Gln Gln Glu Lys Asn Glu
            20                  25                  30


Gln Glu Leu Leu Glu Leu Asp Lys Trp Ala Ser Leu Trp Asn Trp Phe
            35                  40                  45


<210>  45
<211>  42
<212>  PRT
<213>  Artificial

<220>
<223>  synthesized

<400>  45

Asn Asn Met Thr Trp Met Glu Trp Asp Arg Glu Ile Asn Asn Tyr Thr
1               5                   10                  15


Ser Leu Ile His Ser Leu Ile Glu Glu Ser Gln Asn Gln Gln Glu Lys
            20                  25                  30


Asn Glu Gln Glu Leu Leu Glu Leu Asp Lys
            35                  40


<210>  46
<211>  46
<212>  PRT
<213>  Artificial

<220>
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<223> synthesized

<400> 46

Trp Gln Glu Trp Glu Gln Lys Val Arg Tyr Leu Glu Ala Asn Ile Thr
1   5   10   15

Ala Leu Leu Glu Gln Ala Gln Ile Gln Gln Glu Lys Asn Glu Tyr Glu
            20   25   30

Leu Gln Lys Leu Asp Lys Trp Ala Ser Leu Trp Asn Trp Phe
            35   40   45

<210> 47
<211> 50
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 47

Asn Asn Met Thr Trp Gln Glu Trp Glu Gln Lys Val Arg Tyr Leu Glu
1   5   10   15

Ala Asn Ile Thr Ala Leu Leu Glu Gln Ala Gln Ile Gln Gln Glu Lys
            20   25   30

Asn Glu Tyr Glu Leu Gln Lys Leu Asp Lys Trp Ala Ser Leu Trp Asn
            35   40   45

Trp Phe
    50

<210> 48
<211> 36
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 48

Trp Asn Trp Phe Ile Thr Ala Leu Leu Glu Gln Ala Gln Ile Gln Gln
1   5   10   15

Glu Lys Asn Glu Tyr Glu Leu Gln Lys Leu Asp Lys Trp Ala Ser Leu

Trp Asn Trp Phe
        35

<210> 49
<211> 46
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 49

Trp Gln Glu Trp Asp Arg Glu Ile Ser Asn Tyr Thr Ser Leu Ile Thr
1   5   10   15

Ala Leu Leu Glu Gln Ala Gln Ile Gln Gln Glu Lys Asn Glu Tyr Glu
            20   25   30

Leu Gln Lys Leu Asp Glu Trp Ala Ser Leu Trp Glu Trp Phe
        35   40   45

<210> 50
<211> 40
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 50

Trp Gln Glu Trp Glu Arg Glu Ile Ser Ala Tyr Thr Ser Leu Ile Thr
1   5   10   15

Ala Leu Leu Glu Gln Ala Gln Ile Gln Gln Glu Lys Ile Glu Tyr Glu
            20   25   30

Leu Gln Lys Leu Glu Trp Glu Trp
        35   40

<210> 51
<211> 39
<212> PRT
<213> Artificial

<220>

<223> synthesized

<400> 51

Trp Gln Glu Trp Asp Arg Glu Ile Thr Ala Leu Leu Glu Gln Ala Gln
1   5   10   15

Ile Gln Gln Glu Lys Asn Glu Tyr Glu Leu Gln Lys Leu Asp Lys Trp
            20   25   30

Ala Ser Leu Trp Asn Trp Phe
        35

<210> 52
<211> 39
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 52

Trp Gln Glu Trp Asp Arg Glu Ile Thr Ala Leu Leu Glu Gln Ala Gln
1   5   10   15

Ile Gln Gln Glu Lys Asn Glu Tyr Glu Leu Gln Lys Leu Asp Glu Trp
            20   25   30

Ala Ser Leu Trp Glu Trp Phe
        35   .

<210> 53
<211> 35
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 53

Trp Gln Glu Trp Asp Arg Glu Ile Thr Ala Leu Leu Glu Gln Ala Gln
1   5   10   15

Ile Gln Gln Glu Lys Asn Glu Tyr Glu Leu Gln Lys Leu Asp Glu Trp
            20   25   30

Glu Trp Phe

<210> 54
<211> 35
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 54

Trp Gln Glu Trp Glu Arg Glu Ile Thr Ala Leu Leu Glu Gln Ala Gln
1   5   10   15

Ile Gln Gln Glu Lys Ile Glu Tyr Glu Leu Gln Lys Leu Ile Glu Trp
            20   25   30

Glu Trp Phe
        35

<210> 55
<211> 35
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 55

Trp Gln Glu Trp Glu Arg Glu Ile Thr Ala Leu Leu Glu Gln Ala Gln
1   5   10   15

Ile Gln Gln Glu Lys Asn Glu Tyr Glu Leu Gln Lys Leu Ile Glu Trp
            20   25   30

Glu Trp Phe
        35

<210> 56
<211> 35
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 56

Trp Gln Glu Trp Glu Arg Glu Ile Thr Ala Leu Leu Glu Gln Ala Gln
1   5   10   15

Ile Gln Gln Glu Lys Ile Glu Tyr Glu Leu Gln Lys Leu Asp Glu Trp
            20   25   30

Glu Trp Phe
        35

<210> 57
<211> 39
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 57

Trp Gln Glu Trp Glu Gln Lys Ile Thr Ala Leu Leu Glu Gln Ala Gln
1   5   10   15

Ile Gln Gln Glu Lys Asn Glu Tyr Glu Leu Gln Lys Leu Asp Lys Trp
            20   25   30

Ala Ser Leu Trp Asn Trp Phe
        35

<210> 58
<211> 39
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 58

Trp Gln Glu Trp Glu Gln Lys Ile Thr Ala Leu Leu Glu Gln Ala Gln
1   5   10   15

Ile Gln Gln Glu Lys Asn Glu Tyr Glu Leu Gln Lys Leu Asp Lys Trp
            20   25   30

Ala Gly Leu Trp Glu Trp Phe
        35

<210> 59

<211> 39
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 59

Trp Gln Glu Trp Glu Gln Lys Ile Thr Ala Leu Leu Glu Gln Ala Gln
1   5   10   15

Ile Gln Gln Glu Lys Asn Glu Tyr Glu Leu Gln Lys Leu Ala Glu Trp
            20   25   30

Ala Gly Leu Trp Ala Trp Phe
        35

<210> 60
<211> 35
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 60

Trp Gln Glu Trp Glu Gln Lys Ile Thr Ala Leu Leu Glu Gln Ala Gln
1   5   10   15

Ile Gln Gln Glu Lys Ile Glu Tyr Glu Leu Gln Lys Leu Ile Glu Trp
            20   25   30

Glu Trp Phe
        35

<210> 61
<211> 41
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 61

Gln Gln Gln Asn Asn Leu Leu Arg Ala Ile Glu Ala Gln Gln His Leu
1   5   10   15

Leu Gln Leu Thr Ala Trp Gly Ile Lys Gln Leu Gln Ala Arg Ile Leu
          20   25   30

Ala Val Glu Arg Tyr Leu Lys Asp Gln
          35   40

<210>   62
<211>   41
<212>   PRT
<213>   Artificial

<220>
<223>   synthesized

<400>   62

Gln Gln Gln Asn Asn Leu Leu Arg Ala Ile Glu Ala Gln Gln His Leu
1   5   10   15

Leu Gln Leu Thr Val Ala Gly Ile Lys Gln Leu Gln Ala Arg Ile Leu
          20   25   30

Ala Val Glu Arg Tyr Leu Lys Asp Gln
          35   40

<210>   63
<211>   49
<212>   PRT
<213>   Artificial

<220>
<223>   synthesized

<400>   63

Gln Ala Arg Gln Leu Leu Ser Gly Ile Val Gln Gln Gln Asn Asn Leu
1   5   10   15

Leu Arg Ala Ile Glu Ala Gln Gln His Ala Leu Gln Ala Thr Val Trp
          20   25   30

Gly Ile Lys Gln Leu Gln Ala Arg Ile Leu Ala Val Glu Arg Tyr Leu
          35   40   45

Lys

<210>   64

<211> 51
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 64

Gln Ala Arg Gln Leu Leu Ser Gly Ile Val Gln Gln Gln Asn Asn Leu
1   5   10   15

Leu Arg Ala Ile Glu Ala Gln Gln His Ala Leu Gln Ala Thr Val Trp
            20   25   30

Gly Ile Lys Gln Leu Gln Ala Arg Ile Leu Ala Val Glu Arg Tyr Leu
        35   40   45

Lys Asp Gln
    50

<210> 65
<211> 49
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 65

Gln Ala Arg Gln Leu Val Ser Gly Leu Val Gln Gln Gln Asn Asn Ile
1   5   10   15

Leu Arg Ala Leu Glu Ala Thr Gln His Ala Val Gln Ala Leu Val Trp
            20   25   30

Gly Val Lys Gln Leu Gln Ala Arg Val Leu Ala Leu Glu Arg Tyr Ile
        35   40   45

Lys

<210> 66
<211> 49
<212> PRT
<213> Artificial

<220>

<223> synthesized

<400> 66

Gln Ile Arg Gln Leu Leu Ser Gly Ile Val Gln Gln Gln Asn Asn Leu
1   5   10   15

Leu Arg Ala Ile Glu Ala Ile Gln His Ala Leu Gln Ala Ile Val Trp
            20   25   30

Gly Ile Lys Gln Leu Gln Ala Arg Ile Leu Ala Val Glu Arg Tyr Leu
        35   40   45

Lys

<210> 67
<211> 49
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 67

Gln Ala Arg Gln Leu Val Ser Gly Leu Val Gln Gln Gln Asn Asn Ile
1   5   10   15

Leu Arg Ala Leu Glu Ala Thr Gln His Ala Val Gln Ala Leu Val Trp
            20   25   30

Gly Val Arg Gln Leu Gln Ala Arg Val Leu Ala Leu Glu Arg Tyr Ile
        35   40   45

Lys

<210> 68
<211> 51
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 68

Gln Ala Arg Gln Leu Leu Ser Gly Ile Val Gln Gln Gln Asn Asn Leu

Leu Arg Ala Ile Glu Ala Thr Gln His Ala Val Gln Ala Leu Val Trp
        20   25   30

Gly Val Lys Gln Leu Gln Ala Arg Val Leu Ala Leu Glu Arg Tyr Ile
        35   40   45

Lys Asp Gln
    50

<210> 69
<211> 51
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 69

Gln Ala Arg Gln Leu Val Ser Gly Leu Val Gln Gln Gln Asn Asn Ile
1   5   10   15

Leu Arg Ala Leu Glu Ala Gln Gln His Ala Leu Gln Ala Thr Val Trp
        20   25   30

Gly Ile Lys Gln Leu Gln Ala Arg Val Leu Ala Leu Glu Arg Tyr Ile
        35   40   45

Lys Asp Gln
    50

<210> 70
<211> 51
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 70

Gln Ala Arg Gln Leu Leu Ser Gly Ile Val Gln Gln Gln Asn Asn Leu
1   5   10   15

Leu Arg Ala Ile Glu Ala Gln Gln His Ala Leu Gln Ala Thr Val Trp
        20   25   30

Gly Val Lys Gln Leu Gln Ala Arg Ile Leu Ala Val Glu Arg Tyr Leu
      35   40   45

Lys Asp Gln
      50

<210>   71
<211>   41
<212>   PRT
<213>   Artificial

<220>
<223>   synthesized

<400>   71

Gln Gln Gln Asn Asn Leu Leu Arg Ala Ile Glu Ala Gln Gln His Leu
1   5   10   15

Leu Gln Leu Thr Val Phe Gly Ile Lys Gln Leu Gln Ala Arg Ile Leu
            20   25   30

Ala Val Glu Arg Tyr Leu Lys Asp Gln
            35   40

<210>   72
<211>   49
<212>   PRT
<213>   Artificial

<220>
<223>   synthesized

<400>   72

Gln Ala Arg Gln Leu Leu Ser Gly Ile Val Gln Gln Gln Asn Asn Leu
1   5   10   15

Leu Arg Ala Ile Glu Ala Gln Gln His Leu Leu Gln Leu Thr Val Phe
            20   25   30

Gly Ile Arg Gln Leu Gln Ala Arg Ile Leu Ala Val Glu Arg Tyr Leu
            35   40   45

Lys

<210> 73
<211> 51
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 73

Gln Ala Arg Gln Leu Leu Ser Gly Ile Val Gln Gln Gln Asn Asn Leu
1   5   10   15

Leu Arg Ala Ile Glu Ala Gln Gln His Leu Leu Gln Ala Thr Val Trp
            20   25   30

Gly Ile Lys Gln Leu Gln Ala Arg Ile Leu Ala Val Glu Arg Tyr Leu
        35   40   45

Lys Asp Gln
    50

<210> 74
<211> 41
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 74

Gln Gln Gln Asn Asn Leu Leu Arg Ala Ile Glu Ala Gln Gln His Leu
1   5   10   15

Leu Gln Ala Thr Val Trp Gly Ile Lys Gln Leu Gln Ala Arg Ile Leu
            20   25   30

Ala Val Glu Arg Tyr Leu Lys Asp Gln
        35   40

<210> 75
<211> 36
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 75

Asn Ala Ser Trp Ser Asn Lys Ser Leu Glu Gln Ile Trp Asn Asn Met
1   5   10   15

Thr Trp Met Glu Trp Asp Arg Glu Ile Asn Asn Tyr Thr Ser Leu Ile
            20   25   30

His Ser Leu Ile
        35

<210> 76
<211> 36
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 76

Asn Lys Ser Leu Glu Gln Ile Trp Asn Asn Met Thr Trp Met Glu Trp
1   5   10   15

Asp Arg Glu Ile Asn Asn Tyr Thr Ser Leu Ile His Ser Leu Ile Glu
            20   25   30

Glu Ser Gln Asn
        35

<210> 77
<211> 36
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 77

Lys Ser Leu Glu Gln Ile Trp Asn Asn Met Thr Trp Met Glu Trp Asp
1   5   10   15

Arg Glu Ile Asn Asn Tyr Thr Ser Leu Ile His Ser Leu Ile Glu Glu
            20   25   30

Ser Gln Asn Gln
        35

<210> 78
<211> 36
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 78

Ser Leu Glu Gln Ile Trp Asn Asn Met Thr Trp Met Glu Trp Asp Arg
1   5   10   15

Glu Ile Asn Asn Tyr Thr Ser Leu Ile His Ser Leu Ile Glu Glu Ser
            20   25   30

Gln Asn Gln Gln
        35

<210> 79
<211> 36
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 79

Leu Glu Gln Ile Trp Asn Asn Met Thr Trp Met Glu Trp Asp Arg Glu
1   5   10   15

Ile Asn Asn Tyr Thr Ser Leu Ile His Ser Leu Ile Glu Glu Ser Gln
            20   25   30

Asn Gln Gln Glu
        35

<210> 80
<211> 36
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 80

Glu Gln Ile Trp Asn Asn Met Thr Trp Met Glu Trp Asp Arg Glu Ile
1   5   10   15

Asn Asn Tyr Thr Ser Leu Ile His Ser Leu Ile Glu Glu Ser Gln Asn
          20   25   30

Gln Gln Glu Lys
          35

<210>   81
<211>   36
<212>   PRT
<213>   Artificial

<220>
<223>   synthesized

<400>   81

Gln Ile Trp Asn Asn Met Thr Trp Met Glu Trp Asp Arg Glu Ile Asn
1   5   10   15

Asn Tyr Thr Ser Leu Ile His Ser Leu Ile Glu Glu Ser Gln Asn Gln
          20   25   30

Gln Glu Lys Asn
          35

<210>   82
<211>   36
<212>   PRT
<213>   Artificial

<220>
<223>   synthesized

<400>   82

Ile Trp Asn Asn Met Thr Trp Met Glu Trp Asp Arg Glu Ile Asn Asn
1   5   10   15

Tyr Thr Ser Leu Ile His Ser Leu Ile Glu Glu Ser Gln Asn Gln Gln
          20   25   30

Glu Lys Asn Glu
          35

<210>   83
<211>   36
<212>   PRT

<213> Artificial

<220>
<223> synthesized

<400> 83

Trp Asn Asn Met Thr Trp Met Glu Trp Asp Arg Glu Ile Asn Asn Tyr
1   5   10   15

Thr Ser Leu Ile His Ser Leu Ile Glu Glu Ser Gln Asn Gln Gln Glu
            20   25   30

Lys Asn Glu Gln
        35

<210> 84
<211> 36
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 84

Asn Asn Met Thr Trp Met Glu Trp Asp Arg Glu Ile Asn Asn Tyr Thr
1   5   10   15

Ser Leu Ile His Ser Leu Ile Glu Glu Ser Gln Asn Gln Gln Glu Lys
            20   25   30

Asn Glu Gln Glu
        35

<210> 85
<211> 36
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 85

Asn Met Thr Trp Met Glu Trp Asp Arg Glu Ile Asn Asn Tyr Thr Ser
1   5   10   15

Leu Ile His Ser Leu Ile Glu Glu Ser Gln Asn Gln Gln Glu Lys Asn
            20   25   30

Glu Gln Glu Leu
        35

<210> 86
<211> 36
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 86

Met Thr Trp Met Glu Trp Asp Arg Glu Ile Asn Asn Tyr Thr Ser Leu
1   5   10   15

Ile His Ser Leu Ile Glu Glu Ser Gln Asn Gln Gln Glu Lys Asn Glu
            20   25   30

Gln Glu Leu Leu
        35

<210> 87
<211> 36
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 87

Thr Trp Met Glu Trp Asp Arg Glu Ile Asn Asn Tyr Thr Ser Leu Ile
1   5   10   15

His Ser Leu Ile Glu Glu Ser Gln Asn Gln Gln Glu Lys Asn Glu Gln
            20   25   30

Glu Leu Leu Glu
        35

<210> 88
<211> 36
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 88

Trp Met Glu Trp Asp Arg Glu Ile Asn Asn Tyr Thr Ser Leu Ile His
1   5   10   15

Ser Leu Ile Glu Glu Ser Gln Asn Gln Gln Glu Lys Asn Glu Gln Glu
                20   25   30

Leu Leu Glu Leu
            35

<210> 89
<211> 35
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 89

Met Glu Trp Asp Arg Glu Ile Asn Asn Tyr Thr Ser Leu Ile His Ser
1   5   10   15

Leu Ile Glu Glu Ser Gln Asn Gln Gln Glu Lys Asn Glu Gln Glu Leu
                20   25   30

Leu Glu Asp
            35

<210> 90
<211> 36
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 90

Glu Trp Asp Arg Glu Ile Asn Asn Tyr Thr Ser Leu Ile His Ser Leu
1   5   10   15

Ile Glu Glu Ser Gln Asn Gln Gln Glu Lys Asn Glu Gln Glu Leu Leu
                20   25   30

Glu Leu Asp Lys
            35

<210> 91
<211> 36
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 91

Trp Asp Arg Glu Ile Asn Asn Tyr Thr Ser Leu Ile His Ser Leu Ile
1   5   10   15

Glu Glu Ser Gln Asn Gln Gln Glu Lys Asn Glu Gln Glu Leu Leu Glu
            20   25   30

Leu Asp Lys Trp
            35

<210> 92
<211> 36
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 92

Asn Tyr Thr Ser Leu Ile His Ser Leu Ile Glu Glu Ser Gln Asn Gln
1   5   10   15

Gln Glu Lys Asn Glu Gln Glu Leu Leu Glu Leu Asp Lys Trp Ala Ser
            20   25   30

Leu Trp Asn Trp
            35

<210> 93
<211> 36
<212> PRT
<213> Artificial

<220>
<223> synthesized

<400> 93

Thr Ser Leu Ile His Ser Leu Ile Glu Glu Ser Gln Asn Gln Gln Glu

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1                    5                        10                        15

Lys Asn Glu Gln Glu Leu Leu Glu Leu Asp Lys Trp Ala Ser Leu Trp
            20                    25                    30


Asn Trp Phe Asn
        35


<210>  94
<211>  36
<212>  PRT
<213>  Artificial

<220>
<223>  synthesized

<400>  94

Ser Leu Ile His Ser Leu Ile Glu Glu Ser Gln Asn Gln Gln Glu Lys
1                    5                        10                        15


Asn Glu Gln Glu Leu Leu Glu Leu Asp Lys Trp Ala Ser Leu Trp Asn
            20                    25                    30


Trp Phe Asn Ile
        35


<210>  95
<211>  36
<212>  PRT
<213>  Artificial

<220>
<223>  synthesized

<400>  95

Leu Ile His Ser Leu Ile Glu Glu Ser Gln Asn Gln Gln Glu Lys Asn
1                    5                        10                        15


Glu Gln Glu Leu Leu Glu Leu Asp Lys Trp Ala Ser Leu Trp Asn Trp
            20                    25                    30


Phe Asn Ile Thr
        35
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